

**IN THE TITLE**

Please replace the title of the subject application with the following new title:

ULTRASONIC FLOWMETER

### **REMARKS**

The Office rejects claims 1-7 in the subject application. Applicant amends claim 5 to correct a typographical error. Claims 1-7 (2 independent claims; 7 total claims) remain pending in the application.

The Examiner objects to the Abstract of the disclosure, because of the use of the language "For the purpose of solving the above problems, the present invention includes". Applicant has amended the Abstract and requests withdrawal of this objection.

The Examiner objects to the title of the invention and suggests an appropriate title. Applicant has amended the title as suggested by the Examiner and requests withdrawal of this objection.

The Examiner objects to claim 5 for informalities indicating that (on line 3) "the fist time" appears to have a typographical error. Applicant has amended claim 5 to correct the typographical error and requests withdrawal of this objection.

Support for the amendments may be found in the originally filed specification, claims, and figures. No new matter has been introduced by these amendments. Reconsideration of this application is respectfully requested.

### **35 U.S.C. § 103 REJECTIONS**

The Examiner rejects claims 1-7 under 35 U.S.C. §103(a) as allegedly being unpatentable over Nabulsi (U.S. Patent No. 5,918,281, issued June 29, 1999, assignee is inventor) in view of Fletcher-Haynes (U.S. Patent No. 5,831,175, issued November 3, 1998, assignee is Welch Allyn, Inc.). Applicant respectfully traverses the rejection.

### **No Reception Detecting Section Or Counter**

The Examiner alleges that Nabulsi discloses a counter for counting the number of detections by a reception detecting section. In Figure 1 of Nabulsi, the Examiner alleges that a flip-flop 22 is a reception detection section and that a counter 44 is a counter for counting the number of detections by the alleged reception detection section (flip flop 22). But Applicants respectfully disagree with the Examiner.

In Figure 1 of Nabulsi, a controller 16 initially asserts a reset signal at an output lead 26, which is received by counter 44 at an input lead 42 and resets counter 44. The reset signal also is received at input leads 28 and 28a of flip-flops 22 and 24, which results in a logic low output from flip-flops 22 and 24. Since an oscillator 38 does not operate until it receives a logic high signal at an input 36, it also does not output a signal. At this point, the flip-flop outputs 30 and 34 are at logic low, oscillator 38 is off, and counter 44 is reset and not counting.<sup>1</sup>

In the timing diagram of Figure 3 in Nabulsi (at t1), controller 16 de-asserts the reset signal output at output lead 26 and asserts the SET signal at an output lead 18. The SET signal is received at inputs 20 and 20a of flip-flops 22 and 24, and flip-flop 24 outputs a logic high to the input of oscillator 38. As a result, oscillator 38 outputs a 10.2 MHz signal, which is received by counter 44. Counter 44 divides down the signal to approximately 40 KHz, which is provided to a transmitter 12. Transmitter 12 then transmits a 40 KHz sound wave.<sup>2</sup>

As such, counter 44 is used simply to divide down the oscillator's 38 signal to 40 KHz. **Significantly, counter 44 begins counting before transmitter 12 emits a sound wave and, therefore, counter 44 is not counting the number of detections received at the flip-flop 22 (the alleged reception detecting section).**

Further, once the sound wave generated by transmitter 12 is received by a receiver 14, an amplified signal is provided to an input 64 of flip-flop 22. As illustrated in Figure 3 of Nabulsi, the input to flip-flop 22 has received a number of pulses prior to time t2. However, since the SET signal is at logic high, the output of flip-flop 22 does not toggle. As such, **the alleged reception detection section (flip-flop 22) has not yet provided an output, despite receiving a number of inputs. Moreover, counter 44 is counting, despite that flip-flop 22 has not provided an output that corresponds to the number of detections by flip-flop 22. Again, counter 44 is not counting the number of detections received at flip-flop 22 (the alleged reception detecting section).**

At time t2, controller 16 de-asserts the SET signal and flip-flop 24 toggles to a logic low at the next low-to-high transition of the 10.2 MHz signal from oscillator 38. Oscillator 38 receives the logic low signal at time t3 and stops outputting the 10.2 MHz signal. As a result, **the input signal to counter 44 stops, and counter 44 stops counting.**<sup>3</sup> Accordingly, once the

<sup>1</sup> Nabulsi, column 5, lines 12-23.

<sup>2</sup> Nabulsi, column 5, lines 24-51.

<sup>3</sup> Nabulsi, column 6, lines 25-42.

signal from the alleged reception detection section (flip-flop 22) is released, oscillator 38 is shut down and counter 44 is inactive and not counting the number of detections received at flip-flop 22.

Consequently, counter 44 of Nabulsi does not count the number of detections by flip-flop 22 (the alleged reception detection section). While controller 16 does derive a count value from counter 44; this count value does not reflect the number times flip-flop 22 has received an output from receiver 14. Furthermore, Fletcher-Haynes fails to make up for the deficiencies of Nabulsi.

Thus, Nabulsi in view of Fletcher-Haynes fails to teach, advise, or suggest "a reception detecting section for receiving an output of the receiver and detecting the ultrasonic wave signal" as recited in claims 1 and 3 (and claims 2 and 4-7, which variously depend from claims 1 and 3) and "a counter for counting the number of detections by the reception detecting section" as recited in claim 1 (and claim 2, which variously depends from claim 1).

#### **No First Timer**

The Examiner alleges that Nabulsi also discloses a first timer (controller 16), which allegedly measures the time period from the time t1 (when transmitter 12 transmits the ultrasonic wave signal) to the time when the alleged reception detecting section (flip-flop 22) detects the ultrasonic wave signal.

Also, the Examiner alleges that t1 is the time when transmitter 12 transmits the ultrasonic wave signal. But in the timing diagram of Figure 3 in Nabulsi, the input lead 52 to transmitter 12 is not toggled until some time after t1 and, thus, transmitter 12 cannot transmit until some time after t1. **Consequently, the time t1 cannot represent the beginning of the time period when transmitter 12 transmits the ultrasonic wave signal.**

Moreover, even if time t1 were interpreted as the time when transmitter 12 transmits the ultrasonic wave, Nabulsi fails to disclose that the time period between transmission of the ultrasonic wave by transmitter 12 and detection of the ultrasonic wave by the alleged reception detection section (flip-flop 22) is measured by a timer. Nabulsi simply discloses that the time period between transmission of the ultrasonic wave by transmitter 12 and detection of the ultrasonic wave by receiver 14 is defined as  $T_{\text{delay}}$ . **Further, Nabulsi discloses that  $T_{\text{delay}}$  is determined by the physical structure**

of the device.<sup>4</sup> As such,  $T_{\text{delay}}$  (according to Nabulsi) is a known value and, thus, there would be no need to measure such time  $T_{\text{delay}}$ .

Regardless, even if the time  $T_{\text{delay}}$  were measured,  $T_{\text{delay}}$  (as defined in Nabulsi) is the time between transmission by transmitter 12 and detection by receiver 14.  $T_{\text{delay}}$  is not defined as the time when transmitter 12 transmits the ultrasonic wave signal to the time when the alleged reception detecting section (flip-flop 22) detects the ultrasonic wave signal. Accordingly, Nabulsi in view of Fletcher-Haynes fails to teach, advise, or suggest "a first timer for measuring a time period from the time when the transmitter transmits the ultrasonic wave signal to the time when the reception detecting section detects the ultrasonic wave signal" as recited in claim 3 (and claims 4-7, which variously depend from claim 3).

Thus, Nabulsi in view of Fletcher-Haynes fails to teach, advise, or suggest one or more missing claimed limitations, so that claims 1-7 are patentable over these references.

### CONCLUSION

Applicant respectfully submits that the present application is in condition for allowance. Reconsideration of the application is thus requested. Applicant invites the Office to telephone the undersigned if he or she has any questions whatsoever regarding this Response or the subject application in general.

Respectfully submitted,

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<sup>4</sup> Nabulsi, column 5, line 63 to column 6, line 24.